



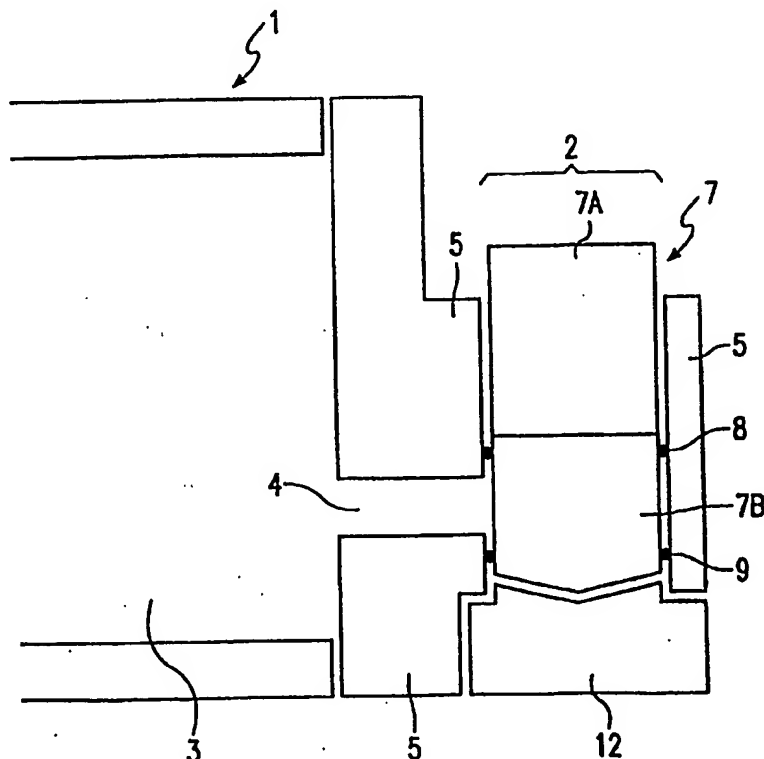
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A23G 9/28, 9/30	A1	(11) International Publication Number: WO 98/58551 (43) International Publication Date: 30 December 1998 (30.12.98)
<p>(21) International Application Number: PCT/NL98/00359</p> <p>(22) International Filing Date: 22 June 1998 (22.06.98)</p> <p>(30) Priority Data: 1006393 25 June 1997 (25.06.97) NL</p> <p>(71) Applicant (for all designated States except US): WIN EQUIPMENT B.V. [NL/NL]; Rikkert Jacobsstraat 14a, NL-3752 EC Bunschoten (NL).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): VAN DEN BOSCH, Willem [NL/NL]; Huizerweg 52, NL-1261 AZ Blaricum (NL).</p> <p>(74) Agent: VAN DEN HEUVEL, Henricus, Theodorus; Octrooibureau Lioc B.V., P.O. Box 13363, NL-3507 LJ Utrecht (NL).</p>		<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report. In English translation (filed in Dutch).</p>

(54) Title: DEVICE FOR PREPARING SOFT ICE-CREAM AND RELATED PRODUCTS AND HEATING MEANS FOR USE THEREON

(57) Abstract

A device (1) described for preparing soft ice-cream, milk shakes and related products. This device (1) comprises at least a first space for receiving and storing the soft ice-cream or milk shake constituents, a second space (3) coupled to the first space and substantially intended for further cooling of said constituents, and at least one draw-off member (2) with an outlet (10) where the soft ice-cream or related product can be drawn off. The draw-off member (2) is herein provided with heating means (12) which can bring about a local heating of the draw-off member to at least 70 °C. Heating means (12) are furthermore described which are suitable for use in the above stated device.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

**Device for preparing soft ice-cream and related products and heating means
for use thereon**

The present invention relates to a device for preparing soft ice-cream, milk shakes
5 and related products, at least comprising a first space for receiving and storing the
soft ice-cream or milk shake constituents, a second space coupled to the first space
and substantially intended for further cooling of said constituents, and at least one
draw-off member with an outlet where the soft ice-cream or related product can be
drawn off.

10

Such a device is known and is much used in catering establishments, such as for
instance so-called fast-food restaurants, for preparing soft ice-cream, milk shakes
and similar products. For this purpose a mixture of the soft ice-cream constituents
is carried in the form of a liquid paste into the first space where cooling of the
15 mixture normally takes place. It is noted that the terms "mixture of soft ice-cream
constituents" and "soft ice-cream constituent mixture" are understood to include
mixtures of milk shake constituents and similar products. In the second space a
further cooling of the mixture takes place, preferably to below 0°C. The further
cooled mixture can subsequently be drawn off per portion from the second space as
20 soft ice-cream or as a milk shake or similar product. For this purpose the second
space is coupled to at least one draw-off member. Owing to the coupling of the
first space to the second the soft ice-cream constituent mixture can flow from the
first to the second space in a manner which may or may not be forced; this can
take place for instance after a quantity of soft ice-cream has been drawn off from
25 the second space, so that the second space is completely filled at all times. Air is
moreover added to the mixture during the passage of the soft ice-cream constituent
mixture from the first to the second space.

Since a soft ice-cream constituent mixture is composed substantially of dairy
30 products and sugar, such a mixture is sensitive to bacteria. This sensitivity is such

that strict hygienic measures must be observed to limit the growth of bacteria as much as possible. Particularly locations on or close to the outlet where the soft ice-cream or related product is drawn off are found to be sensitive to bacteria. Situated at this outlet is the transition between the cooled device which is not accessible from outside and a non-cooled area which is accessible from outside. During dispensing of soft ice-cream or a related product remnants of the product are normally left on or close to the outlet of the draw-off member which is in open communication with the non-cooled environment. It will be apparent that bacteria growth in the discarded remnants will be stimulated rather than inhibited, not least because the sweet product attracts insects.

In order to inhibit as far as possible the above stated undesired bacteria growth the draw-off member must be cleaned and made sterile with great regularity. This usually takes place by wiping clean the outlet of the draw-off member with a cloth or brush soaked with a solution of a cleaning agent or disinfectant. It is important that this latter operation is carried out very carefully so that no product remnants whatever remain behind on the underside. If the care taken is not optimal and product remnants do thus remain behind on the outlet, this will result in further bacteria growth and deterioration of the product to be dispensed.

It will be apparent that the above mentioned method of cleaning the draw-off member is not "watertight" and that the risk of the operation not being carried out carefully is considerable.

The present invention has for its object to provide a device for preparing soft ice-cream, milk shakes and related products, wherein the above stated problems do not occur. For this purpose the present invention provides a device as according to the preamble which is characterized in that the draw-off member is provided with heating means which can bring about a local heating of the draw-off member to at least 70°C.

Through local heating of the draw-off member, wherein at least a temperature of 70°C must be reached, the possibly present bacteria located in the soft-ice cream product remnants on the draw-off member are eliminated.

5 It should be noted that in some embodiments of soft-ice cream devices the draw-off member is already subjected to a heat treatment. These are devices which are embodied such that they can be subjected to a process wherein the soft ice-cream constituent mixtures situated in both the first space and in the second space are heated simultaneously to about 70°C, subsequently held at this temperature for
10 about 30 minutes and then cooled. This process is known as pasteurization and re-cooling. This process is normally carried out at the end of each working day in order to rid the soft ice-cream constituent mixture present in the device as far as possible of the bacteria which may be present therein. A part of the draw-off member is also heated by the heat transfer from the mass in the second space.

15 The heat to which the draw-off member is subjected during the above pasteurization process is however insufficient to achieve complete elimination of the bacteria present in or on the draw-off member. Furthermore, a part of the draw-off member on or close to the outlet is usually manufactured from plastic and in
20 this part the temperature at which elimination of the bacteria occurs is not reached.

It will be apparent that the present invention does not relate to the heating means which realize a pasteurization treatment but to separate heating means which on the contrary are incorporated in the draw-off member and can bring about a heating at
25 that location.

In a particular embodiment the heating means comprise an electrical heating element.

30

Such an element can be controlled from outside and can preferably be adjusted, for instance such that heating of at least a part of the draw-off member takes place during pasteurization of the first and the second space.

- 5 Since the problem of the undesired bacteria growth takes place particularly in the part of the draw-off member close to the outlet, it is recommended that the heating means are provided on or close to the outlet of the draw-off member.

10 In a preferred embodiment the heating means can be releasably coupled to the outlet of the draw-off member.

In this embodiment a simple coupling of the heating means to the outlet takes place, followed by performing of a heating treatment, whereafter the heating means are removed and the outlet is free of bacteria.

15

Finally, the present invention relates to heating means suitable for use in the above stated device.

20 In an embodiment suitable for this purpose, such heating means can likewise be applied in already existing devices for preparing soft ice-cream, milk shakes and related products in order that these devices are also provided with a "watertight" system for the removal of undesired bacteria.

25 The present invention will be further elucidated hereinbelow with reference to the annexed drawing, in which:

figure 1 shows schematically a draw-off member of a device for preparing soft ice-cream or related products, in addition to a part of this device; and

30 figure 2 shows schematically the draw-off member of figure 1 which is releasably coupled to heating means.

The figure is purely schematic and not drawn to scale. For the sake of clarity some dimensions in particular are shown in greatly exaggerated manner. Corresponding components are designated as far as possible in the figures with the same reference numeral.

5

Figure 1 shows schematically the part of a device for preparing soft ice-cream, milk shakes and related products 1 where the draw-off member 2 is provided. Reference numeral 3 shows the second space of the above stated device, or the freezing cylinder, where the soft ice-cream constituent mixture is cooled to below 0°C. This space 3 communicates with draw-off member 2 via a passage 4. Draw-off member 2 comprises a housing 5 of substantially circular cross-section. As the figure shows, a part of the housing also forms the front side of the second space 3 of the soft ice-cream device. In housing 5 is arranged a substantially solid, cylindrical element 7 which in the configuration shown in the figure connects to the inner wall of housing 5 by means of two O-rings 8,9. Reference numeral 10 shows the outlet of draw-off member 2.

The housing 5 of draw-off member 2 is usually manufactured from plastic material, as is the upper part 7A of cylindrical element 7. The lower part of this latter element is usually manufactured from a metal.

When a portion of soft ice-cream is drawn off from the device 1, the cylindrical element 7 is moved in upward direction using operating means (not shown in the figure); this situation is indicated with dashed lines in figure 1. During this situation the soft ice-cream product present in freezing cylinder 3 can flow out of the outlet 10 via passage 4. Typically situated on the outlet is a nozzle (not shown in the figure) which is connected fixedly or releasably, for instance by means of a screw connection, to the outlet 10 of draw-off member 2. When cylindrical element 7 is moved downward again into the position indicated in figure 1 with full lines, the connection of passage 4 to outlet 10 is blocked so that the soft ice-cream product cannot flow out of the outlet.

Due to the reciprocating movement of cylindrical element 7 which comes into contact with the soft ice-cream product, ice-cream remnants remain behind particularly on the underside of the housing 5 close to outlet 10 and in the part close to O-rings 8,9. As stated, such product remnants are very sensitive to
5 bacteria.

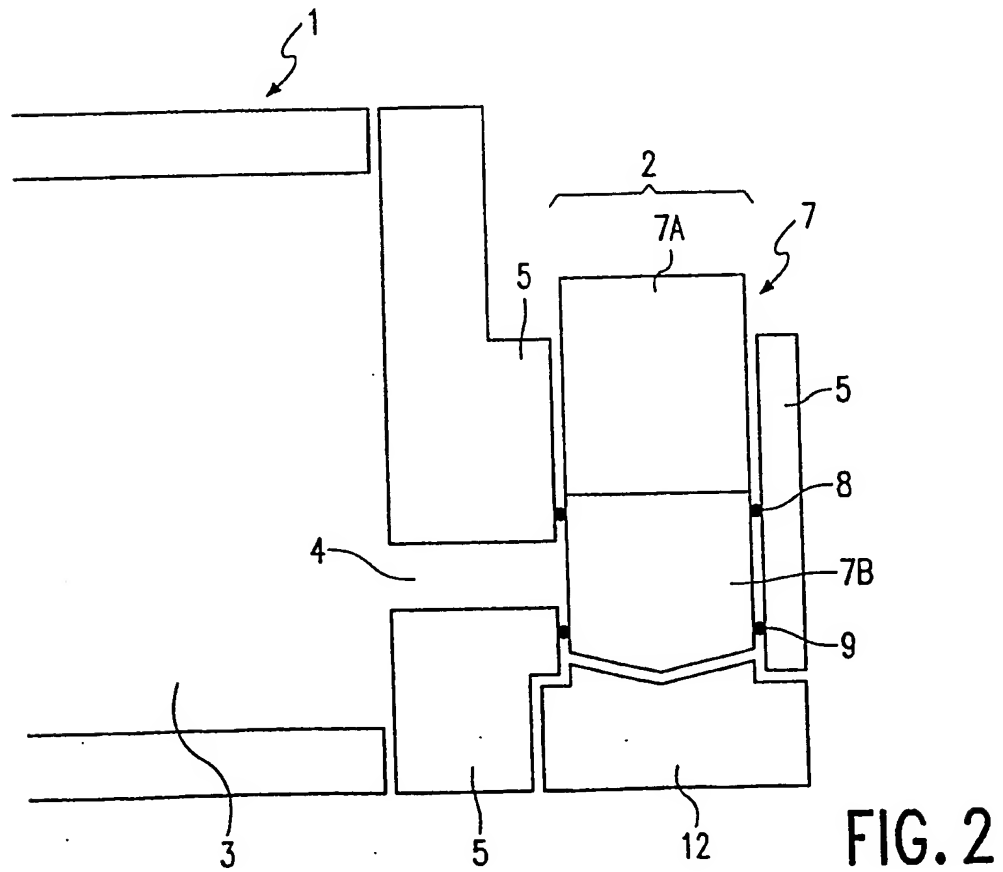
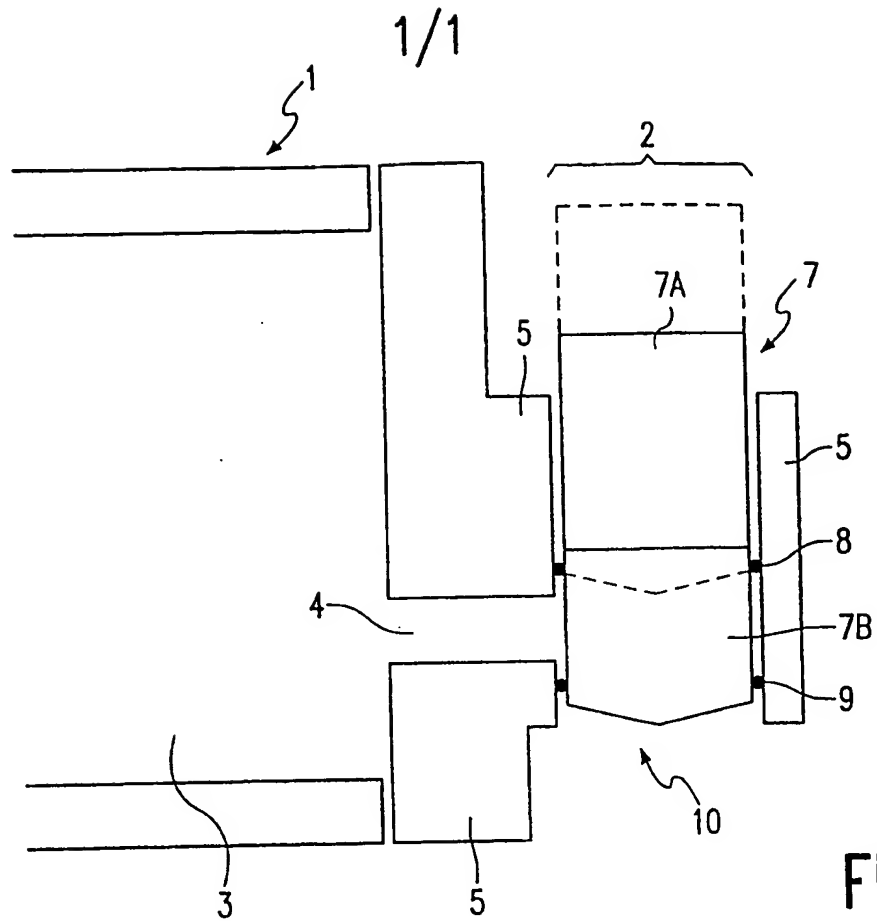
When the soft ice-cream device is embodied such that the soft ice-cream constituent mixture in the first and second space can be subjected to a pasteurization process, heat is transferred during this process from the mass in the
10 second space to the draw-off member. A part of the draw-off member, i.e. the part manufactured from metal, is herein found to be heated to a temperature of 70°C. However, the parts of draw-off member 2 which are manufactured from plastic, i.e. housing 5 and a part of cylindrical element 7, where as discussed above a source of bacteria growth is present, are found not to reach such a temperature, so that here
15 the danger of excessive bacteria growth is not eliminated.

This problem is solved according to the present invention by providing the draw-off member with heating means which can bring about a local heating of the draw-off member to at least 70°C. Such heating means can for instance comprise an
20 electrical heating element which is incorporated in the housing 5 of draw-off member 2 and can effect a local heating to at least 70°C of those parts of the draw-off member where there is a danger of excessive bacteria growth.

A preferred embodiment of the device according to the present invention is shown
25 in figure 2. This figure shows a device as according to figure 1, which however is releasably coupled to heating means 12 in the form of an electrical heating element which can be coupled to the outlet of draw-off member 2 and can effect a local heating of the parts of the draw-off member where there is a danger of excessive bacteria growth. Setting the heating means into operation results in the plastic parts
30 of the draw-off member also being heated to 70°C so that bacteria growth is eliminated. The coupling between heating means 12 and outlet 10 can take place in any manner known to the skilled person.

Claims

1. Device (1) for preparing soft ice-cream, milk shakes and related products, at least comprising a first space for receiving and storing the soft ice-cream or milk shake constituents, a second space (3) coupled to the first space and substantially intended for further cooling of said constituents, and at least one draw-off member (2) with an outlet (10) where the soft ice-cream or related product can be drawn off, **characterized in that** the draw-off member (2) is provided with heating means (12) which can bring about a local heating of the draw-off member (2) to at least 70°C.
2. Device as claimed in claim 1, **characterized in that** the heating means (12) comprise an electrical heating element.
3. Device as claimed in claim 2, **characterized in that** the electrical heating element is incorporated in the draw-off member (2).
4. Device as claimed in one or more of the foregoing claims, **characterized in that** the heating means are provided on or close to the outlet (10) of the draw-off member (2).
5. Device as claimed in claim 1 or 2, **characterized in that** the heating means (12) can be releasably coupled to the outlet (10) of the draw-off member (2).
6. Heating means (12) suitable for use in a device as claimed in one or more of the claims 1-5.



INTERNATIONAL SEARCH REPORT

International Application No
PCT/NL 98/00359

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A23G9/28 A23G9/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A23G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 10 07 791 B (R. MÜLLER) 16 June 1954 see the whole document ---	1-6
A	US 1 455 156 A (RUSSELL A. WILLSON) 15 May 1923 see the whole document ---	
A	US 4 758 143 A (DEERING ICE CREAM CORP.) 19 July 1988 see column 10, line 28 - column 11, line 24; figures 3-4B ---	1
A	US 3 961 494 A (THE KROGER COMP.) 8 June 1976 see the whole document ---	1
A	US 4 094 446 A (J. W. BRUTSMAN) 13 June 1978 ---	1
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

24 August 1998

Date of mailing of the international search report

31/08/1998

Name and mailing address of the ISA
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Guyon, R

INTERNATIONAL SEARCH REPORT

International Application No
PCT/NL 98/00359

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
------------	--	-----------------------

A	US 4 711 376 A (CARPIGIANI BRUTO MACCHINE) 8 December 1987 see the whole document ----	1
---	---	---

A	US 2 784 565 A (O. M. STALKUP) 12 March 1957 see figures ----	1
---	--	---

A	US 2 558 887 A (T. R. TESIERO) 3 July 1951 see figure 4 ----	1
---	--	---

A	US 2 703 967 A (R. L. JESTER ET AL.) 15 March 1955 -----	
---	--	--

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/NL 98/00359

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 1007791 B		NONE	
US 1455156 A	15-05-1923	NONE	
US 4758143 A	19-07-1988	CA 1284287 A	21-05-1991
US 3961494 A	08-06-1976	NONE	
US 4094446 A	13-06-1978	CA 1052431 A	10-04-1979
US 4711376 A	08-12-1987	NONE	
US 2784565 A	12-03-1957	NONE	
US 2558887 A	03-07-1951	NONE	
US 2703967 A	15-03-1955	NONE	